UNITED STATES PATENT AND TRADEMARK OFFICE

APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
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MOTOROLA INC
MAIL DROP PL02
7700 WEST PARMER LANE
AUSTIN, TX 78729

EXAMINER
LEWIS, MICHAEL A

ART UNIT	PAPER NUMBER
2655	

DATE MAILED: 07/20/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) FROM
THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed
  after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
  Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any
  earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on _____.

2a)☐ This action is **FINAL**.   2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is
    closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-28* is/are pending in the application.

    4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☒ Claim(s) *9 - 23, 27 & 28* is/are allowed.

6)☒ Claim(s) *1 -8, 24 -26* is/are rejected.

7)☐ Claim(s) _____ is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

    Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

    Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

    a)☐ All b)☐ Some * c)☐ None of:

      1.☐ Certified copies of the priority documents have been received.

      2.☐ Certified copies of the priority documents have been received in Application No. _____.

      3.☐ Copies of the certified copies of the priority documents have been received in this National Stage
    application from the International Bureau (PCT Rule 17.2(a)).

    * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
    Paper No(s)/Mail Date <u>02</u>.

4) ☐ Interview Summary (PTO-413)
    Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

DETAILED ACTION

Allowable Subject Matter

1.   Claims 9 – 23 & 27 – 28 are allowable subject matter over prior art.

2.   The following is a statement of reasons for the indication of allowable

subject matter:

Regarding the claims 9 – 23 & 27 - 28, the combination of

Konstantinides (IEEE 1070-9908/94) and Hong (US6094637) teach

prestoring cosine coefficients. However, the combination do not

teach the claim language referring to prestoring the cosine

coefficients $C(k-1,i)$ and $C(k-2,i)$ for each column of the matrix;

prestoring an adjustment value $cos(E(i))$ for each column of the

matrix; and calculating the cosine coefficients for the remaining

locations in the matrix using the prestored coefficients and the

prestored adjustment values in accordance with the equation $C(k,$

$i)=2 cos(E(i))*C(k-1,i)-C(k-2,i)$ or $C(k+1, I) = 2cos(E(i))*C(k, i) -$

$C(k-1,i)$.

Furthermore, it would not have been obvious to one of ordinary skill

in the art to modify the teachings of the prior art of record to modify

the recited claim limitations above.

Claim Rejections - 35 USC § 103

1.   The following is a quotation of 35 U.S.C. 103(a) which forms the basis for

all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described
> as set forth in section 102 of this title, if the differences between the subject matter sought to
> be patented and the prior art are such that the subject matter as a whole would have been
> obvious at the time the invention was made to a person having ordinary skill in the art to which
> said subject matter pertains. Patentability shall not be negatived by the manner in which the
> invention was made.

2.   The factual inquiries set forth in *Graham* v. *John Deere Co.*, 383 U.S. 1,

148 USPQ 459 (1966), that are applied for establishing a background for

determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1.   Determining the scope and contents of the prior art.
2.   Ascertaining the differences between the prior art and the claims at issue.
3.   Resolving the level of ordinary skill in the pertinent art.
4.   Considering objective evidence present in the application indicating obviousness or nonobviousness.

3.   Claims 1 - 8 & 24 – 26 are rejected under 35 U.S.C. 103(a) as being

unpatentable over Konstantinides (IEEE 1070-9908/94) and in view of Hong

(US6094637).

In regards to claims 1, 7, 24 & 26, Konstantinides discloses a digital filter

for sub-band synthesis consisting of a processor with memory and a

method of performing an IDCT (Inverse Discrete Cosine Transform)

process that generates time domain samples from frequency domain

samples using prestored cosine coefficients, comprising: prestoring only

the cosine coefficients that satisfy cos(.pi.*(i/64)) for i=0 to 32(Page 26,

Col 1, Sect II) *[Konstantinides describes deriving 64 samples that are*

derived from 32 input audio samples after some appropriate windowing

and shift and add operations. Note that i=0 to 31 will give 32 coefficients

that are standard].

Konstantinides do not disclose calculating cosine coefficients using the

prestored coefficients by changing a sign of a corresponding symmetrical

one of the stored coefficients, respectively. However, Hong discloses a

sign vector that gives positive or negative according to whether the

associated time index is even or odd. A decoding process for a MPEG

audio subband can use symmetry of filter coefficients to reduce the

number of multiplications required for an audio subband.

Therefore, it would have been obvious to one of ordinary skill at the time

of the invention to modify Konstantinides with the use of a sign vector to

increase the capacity of the stored coefficients as taught by Hong since it

would help improved the efficiency of the decoding process to reduce the

number of multiplications required for an audio subband.

In regards to claims 2, 5 & 25, Konstantinides discloses the step of:

generating sixty-four time domain samples (V.sub.i) from thirty-two

frequency domain samples (S.sub.k) according to the Eqn 7, V i = cos ((/

64) (i + 16) (2 k + 1)) x S k for k = 0 to 31 & i=0 to 63, using only the

prestored cosine coefficients and the calculated cosine coefficients (Page

27, Eqn. 13).

In regards to claims 3, 6 & 8, Konstantinides discloses the sequence of

time domain samples are from an MPEG compliant audio sub-band (Page

27, Section III).

In regards to claim 4, Konstantinides discloses a digital filter for sub-band

synthesis, a method of performing an IDCT (Inverse Discrete Cosine

Transform) process that generates time domain samples from frequency

domain samples using prestored cosine coefficients, comprising:

prestoring only the cosine coefficients that satisfy cos(.pi.*(i/64)) for i=0 to

63 (Page 27, Eqn. 11a – Eqn. 12).

Conclusion

1.   The prior art made of record and not relied upon is considered pertinent to

applicant's disclosure.

Sato	U.S. Patent (5675703)
Konstantinides	U.S. Patent (5508949)

| Han et al. | U.S. Patent (5812979) |
| Bae et al | U.S. Patent (6421695) |

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael A Lewis whose telephone number is 703 305-8730. The examiner can normally be reached on Monday through Friday, 8:30 am – 5 pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Doris To can be reached on (703)305-4827. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Lewis A Michael
Examiner
Art Unit 2655

Mal

W. R. YOUNG
PRIMARY EXAMINER

5/25/2004